Chemguide - answers

ACYL CHLORIDES: REACTIONS WITH AMMONIA AND PRIMARY AMINES

1. ethylamine: CH₃CH₂NH₂

phenylamine:

You can think of these as ammonia molecules in which one of the hydrogens has been replaced by a hydrocarbon group.

2. a) ethanamide:

- b) Ammonia is basic and HCl is, of course, acidic. Any HCl produced would immediately react with any ammonia present to give ammonium chloride.
- c) A vigorous reaction producing thick white smoke (a mixture of ethanamide and ammonium chloride but you aren't specifically asked for the names, so you don't need them).
- 3. a) N-ethylethanamide and ethylammonium chloride

N-ethylethanamide:

ethylammonium chloride: CH₃CH₂NH₃⁺ Cl⁻

(You must show the fact that the ethylammonium chloride is ionic. Because you aren't asked for it, there is no real need to give a fully displayed structural formula in either of these cases.)

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(Never let the fact that you have scary-looking molecules put you off! The key reaction is just the same in both of these two cases. The fact that you have extra bits and pieces hanging off irrelevant parts of the molecules makes no difference to this at all. If you are asked to do something, it must be possible to do it within the knowledge that you have. Some examiners make a habit of never asking for the simplest case, but dressing it up to make it look difficult – it isn't!)